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# APR350/380 Handheld Reader
# Operation Manual

**V12/10/09**

For Firmware Version 2.11 and higher

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# 1. Introduction

This manual describes the basic functions, advanced features and the menu structure of the **A**grident **P**ortable **R**eader APR350/380.

Please read the manual carefully in order to avoid annoying data loss, to prevent the APR from getting damaged and to get access to all features of the reader.

## 1.1 Features

- Fully compatible with ISO standards 11784/11785, the APR reads both, FDX-B and HDX transponders.
- Over 5000 IDs, including time stamp, ALIAS or ACTION CODE and ACTION CODE PLUS can be stored.
- The non-volatile memory of the reader ensures that the data are protected from getting lost if the batteries run empty.
- The two Hotkeys do not only initiate a reading process, they can be configured to start several different operations, e.g. to record actions for read animal IDs.
- Transponder IDs can be linked to an alphanumeric string with up to 16 characters. These strings are called ALIAS (see chapter 3.2.1)
  - A preassembled list of ALIASES (Taglist) can be linked to scanned IDs with the APR in the field.
  - The ALIASES can be assigned to IDs on the PC and the APR can display the ALIAS instead of the ID in the field.
  - ALIASES can be entered manually after reading a transponder in the field using the “Assign Ask” mode.
  - In combination with the “Search” function the ALIAS allows to find individual animals in a larger group of animals.
- ACTION CODES allow to assign events to animals like sales, movements, diseases or treatments (see chapter 3.2.2).
- The ACTION CODES are free editable in the ACTION CODE LIST on the PC and have to be uploaded before they are available in the APR.
- The ACTION CODE PLUS offers the possibility to assign a numeric value in addition to an ACTION CODE - e.g. the weight (see chapter 3.2.2).
- IDs of animals with a missing or defective transponder can be stored manually using the “No Tag mode” (see chapter 4.2.3).
- The APR380 has an integrated Class 2 Bluetooth module that enables wireless communication with other Bluetooth devices over a distance of up to 10 m.
- The APR is shipped with a PC-Demosoftware. This allows to access all features of the reader for demonstration or testing purposes.

## 1.2 Accessories

The APR350/380 can be purchased with a wide range of accessories.

### 1.2.1 APC150 RS232 cable

The APC150 is an RS232 interface for the APR350/380. It has to be connected with the top-mounted plug of the APR and on the PC side to an RS232 port with 9pin D-Sub connector. It allows the data transfer between reader and PC and the charging of batteries, if rechargeable batteries are used.

The APC150 needs a separate power supply in order to work! This can be either an Agrident AC/DC power supply or the ACC100 car charger which have to be ordered separately.

The APC150 allows fast charging the batteries in less than 8 hours in combination with a power supply.

### 1.2.2 APC250 USB cable

The APC250 is an USB interface for the APR350/380. It has to be connected with the top-mounted plug of the APR and on the PC side to an USB port. It allows the data transfer between reader and PC and the charging of batteries, if rechargeable batteries are used.

For the communication and for trickle charging the batteries, no additional power supply is required. For fast charging you need an additional power supply which is not part of the APC250 and has to be ordered separately.

The APC250 allows fast charging the batteries in less than 8 hours, trickle charging takes up to 20 hours.

### 1.2.3 ADS200 docking station

The ADS200 allows to connect the APR to the PC in a fast and easy way via a contactless interface. The docking station can transfer data from the reader to your computer and vice versa via an USB-port.

The docking station needs an external power supply for operation, which is part of the ADS200 Kit. The package also contains an USB cable for connecting the cradle to a PC. The ACC100 car charger might be used for the power supply as well but is not part of the Kit.

The ADS200 also allows to trickle charge the APRs batteries if rechargeable batteries are used. Trickle charging can take up to 20 hours. Fast charging is not possible with the docking station.

### 1.2.4 ACC100 car charger

The ACC100 is a cable with a plug for cigarette lighters. It allows you to supply the APC150, the APC250 and the ADS200 docking station with 12 volt from the car battery. If rechargeable batteries are used in the APR350/380 you can fast-charge your APR when you are on the way.

The ACC100 itself cannot be connected to the reader. You always need an APC150/250 cable or the docking station ADS200 additionally!

### 1.2.5 AEA080 external antenna

The very robust AEA080 external stick antenna gives the user a larger physical read range, to obtain a transponder signal even from harder accessible tags. The electrical reading distance is the same like for the internal antenna.

The APR automatically detects an external connected antenna. In this case the internal antenna is deactivated and the AEA080 will be used. If the external antenna plug is removed, the reader will automatically use the internal antenna again.

# 2. Security Advices

| | |
|---|---|
| | **Attention! After each battery replacement please check the power manager for the correct battery type (see chapter 4.1.9) A wrong battery setup may destroy the reader and leads to the loss of warranty!** |

| | |
|---|---|
| | **Warning! Recharging standard non-rechargeable batteries will destroy them and the acid of the batteries will damage the APR. Any defect of the reader caused by recharging standard non-rechargeable batteries is not covered by the warranty.** |

| | |
|---|---|
| | **Caution! Dispose of exhausted rechargeable and non-rechargeable batteries must be compliant with your local laws. To ensure proper compliance is entirely the responsibility of the owner and / or user of the reader.** |

# 3. Operating the APR

This chapter introduces the basic operations of the APR350/380.

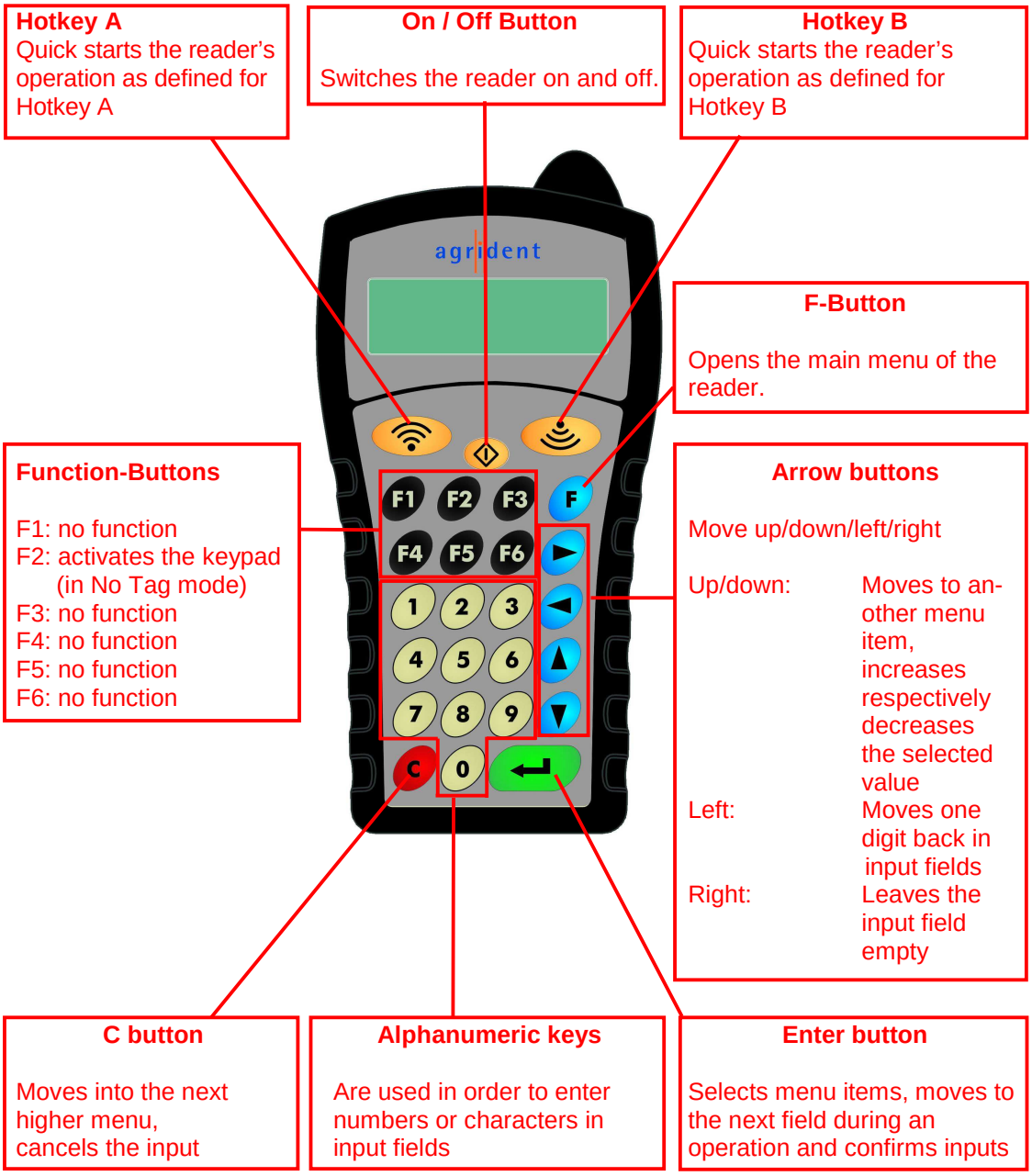
For a more detailed description of the features read chapter 4.

## 3.1 Reading Transponders with the APR

This chapter explains how to read transponders, how to operate the APR via the keypad and how to interpret display messages and acoustic signals.

### 3.1.1 Keys of Operation

The operation of the APRs keypad is described below:


Hotkey A
Quick starts the reader's operation as defined for Hotkey A
On / Off Button
Switches the reader on and off.
Hotkey B
Quick starts the reader's operation as defined for Hotkey B
F-Button
Opens the main menu of the reader.
Function-Buttons
F1: no function
F2: activates the keypad (in No Tag mode)
F3: no function
F4: no function
F5: no function
F6: no function
Arrow buttons
Move up/down/left/right
Up/down: Moves to another menu item, increases respectively decreases the selected value
Left: Moves one digit back in input fields
Right: Leaves the input field empty
C button
Moves into the next higher menu, cancels the input
Alphanumeric keys
Are used in order to enter numbers or characters in input fields
Enter button
Selects menu items, moves to the next field during an operation and confirms inputs
agrident
F1 F2 F3 F
F4 F5 F6
1 2 3
4 5 6
7 8 9
C 0

### 3.1.2 Getting started

Press the button in order to activate the APR. The display will pass through the following status messages automatically.

| | |
|---|---|
| Agrident V.: 2.11<br>Battery OK | Agrident V.: 2.11<br>Standalone |
| Agrident V.: 2.11<br>Data 0/5760 | Agrident V.: 2.11<br>07.07.09 11:42 |

You can also scroll through the messages manually by pressing the / buttons.

In order to save battery capacity, the APR will switch off after a certain time – this time is called “Power Off”. The default setting is 5 seconds but you can change this value in the “Power Off” submenu (see chapter 4.1.4).

#### Clock Error

When the batteries of the APR are empty or have been removed for a longer time, a clock error may occur.

```
! ! ! Clock Error ! !
```

Press the button, the display will show the Time and Date menu (see Chapter 4.1.7).

```
Set Time
→00←:00
```

After you entered a valid time and a valid date and confirmed by pressing you can leave the menu by pressing the button twice.

#### Reading a transponder

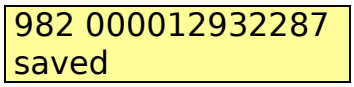
After switching on your reader with the button, a reading attempt can be started pressing or , per default the APR will try to read a transponder 7 seconds.

```
Read Hotkey A
. . . . . .
```

The APR tries to read a transponder within range of its antenna (see chapter 3.1.3).

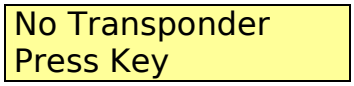
You may also start reading directly without using the button. If the reader is switched off and you push the Hotkeys or , the reader is switched on and reading will be started in one step.

A successful reading attempt shows…




…the read ID and the information “Saved”.

If no transponder could be read…

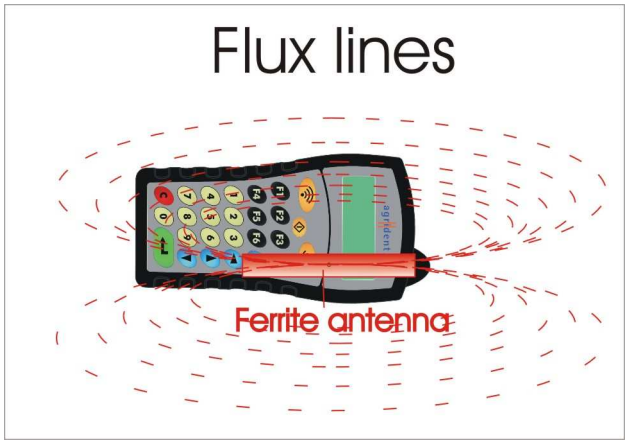



…there was no transponder in range (see chapter 3.1.3) or the transponder might be damaged. The “No Tag” mode (see chapter 4.2.3) allows the user to enter the ID in the field manually, if the reading attempt failed.

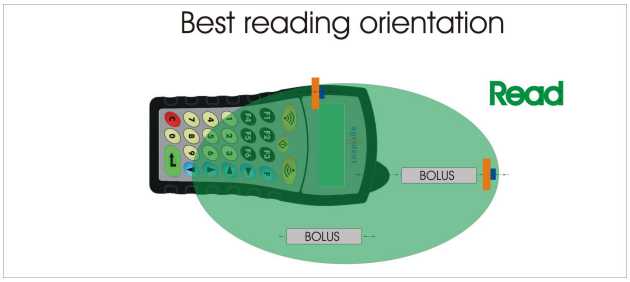
| | |
|---|---|
| | **Please note that in order to use the APR just for reading transponders (no Alias or Action Code) like described above, the following default settings have to be altered: The No Actioncode-setting has to be selected for the corresponding Hotkey (see chapter 4.2.1) and No Tag-mode has to be disabled (see chapter 4.2.3).** |

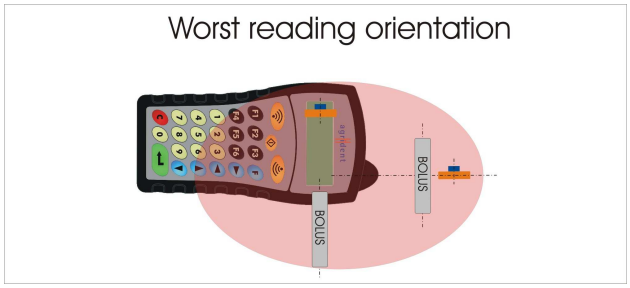
### 3.1.3 APR – Transponder orientation and flux lines

The APR is using a ferrite antenna. Accordingly the flux lines have the following characteristics:

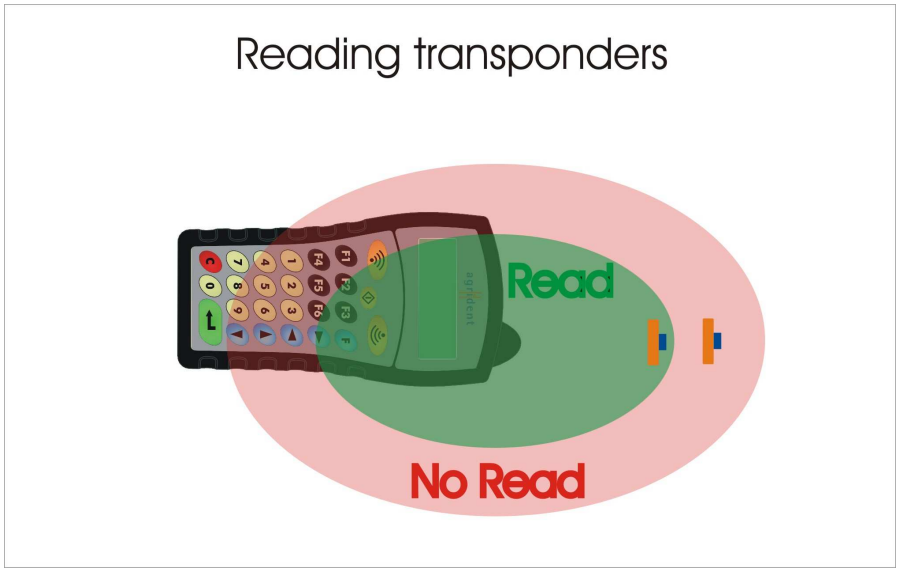



As a result of the flux line characteristics, there is a best reading orientation and a worst reading orientation:




The reading range does not only depend on the transponder orientation but also on the type of transponder. Transponders with a good performance have a better reading distance than low performance tags.




Generally HDX transponders can be read up to 25cm, FDX-B up to 20cm.

### 3.1.4 Status messages in the Display and acoustic signals

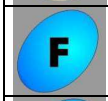
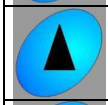
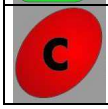
**Status messages**

| Status Message | Description |
|---|---|
| Data 0/5760 | Indicates that 0 datasets are stored in the APRs memory and there is storage capacity left for 5760 datasets. |
| Battery OK | Sufficient battery capacity left for operation. |
| Battery empty | The capacity of the battery down to 5 - 10%, please change your batteries. In case of using rechargeable batteries you can also charge your APR with the appropriate Agrident power supply unit (see chapter 2). |
| Memory full | The memory of the APR is full, please download the collected data to a PC with the corresponding software and clear the memory. |
| Extern Power APC | The APR is connected to an APC150/250 and uses non-rechargeable batteries. |
| Fast-charge | The APR is connected to an APC150/250 with additional power supply and the batteries are currently fast-charging. When Fast-charging is finished, the reader will automatically start trickle-charging in order to keep all the battery capacity. |
| Trickle-charge | The APR is connected to an APC250 without additional power supply or to an APC150 and the batteries are currently trickle-charging. |
| Cradle IR | Your APR is connected to a computer via ADS200 docking station. |
| Standalone | Regular operation mode in the field, APR is not connected to any cable/charger. |
| ! ! !Clock Error ! ! | Appears if the APR was without batteries for a longer time or if the batteries were completely empty (see chapter 3.1.2). |

**Acoustic signals**

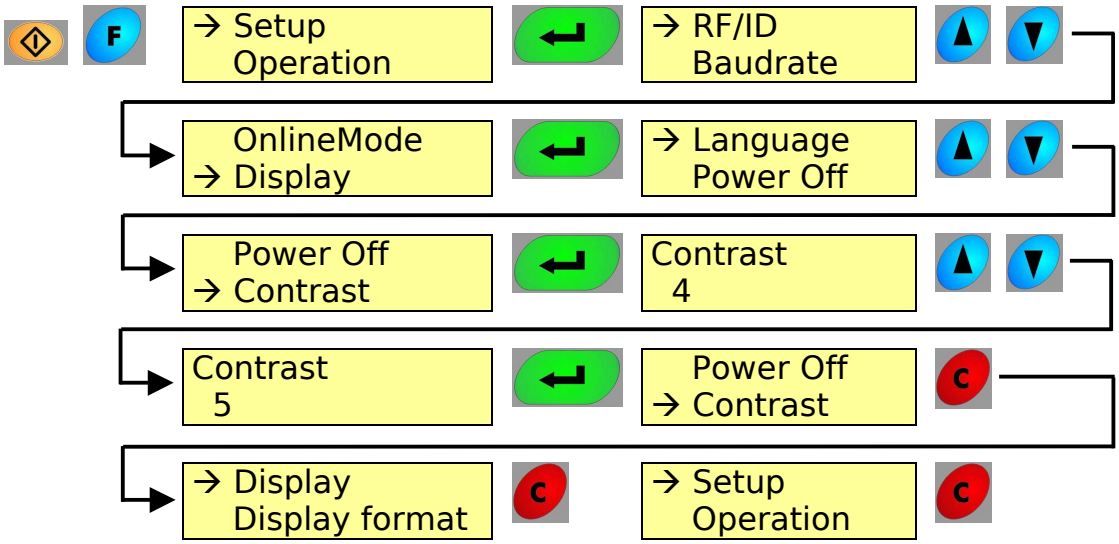
| Acoustic signal | | | |
|---|---|---|---|
| **Number** | **Length** | **Tone** | **Meaning** |
| 1 | short | high | by pressing any button (except / / ,) the keyboard emits a single short BEEP |
| 4 | short | high | good ID read |
| 1 | long | high | no ID read |
| 1 | short | high/low | double read in an allotted time (see chapter 4.1.1) |
| 2 | short | high/low | Transponder in the Tag List was found in search mode (see chapter 4.2.1)<br>The ID is already assigned to an Alias |

## 3.2 Navigating through the menus of the APR

| Button | Meaning |
|---|---|
| | Switches the APR on and off. |
|  | Enters the APRs menu. |
|  | Scrolls up in the menu, increases numeric values in particular submenus. |
| | Scrolls down in the menu, decreases numeric values in particular submenus. |
| | Enters a submenu, confirms changes in the lowest menu level and leaves this submenu to the next higher menu item. |
|  | Changes from a submenu to the next higher menu item, leaves settings in the lowest menu level unchanged and changes to the next higher menu level. |

**Example:**

You want to change the contrast level of the APRs display.




For a detailed description of the APR menus see chapter 4.

## 3.3 Transferring data with the APR

If you want to download collected data from the APR to your PC or upload lists to the reader, you have to connect the APR to the PC via an interface. This interface can be the docking station, the APC150 RS232-cable, the APC250 USB-cable or the bluetooth module in case of using of an APR380.

Beside the physical connection you need appropriate software on your PC that is able to communicate with the APR. This can be your management software or the Agrident PC-Demosoftware. Before the communication can start, a communication port (ComPort) has to be selected and opened.

### 3.3.1 ADS 200 docking station

The most convenient way to communicate with the APR is the ADS200 docking station. Connect the ADS to your PC using the provided USB cable and power supply. Windows will ask for USB drivers. For the installation of the drivers see the driver installation guides on the APR CD. The drivers are located in the “USB_Driver” folder. After the drivers were installed successfully, you have to start your PC-Software and open the correct comport. Put the APR into the docking station, it will switch on automatically. If you have opened the correct port, you can now start to communicate with the reader.

### 3.3.2 Bluetooth

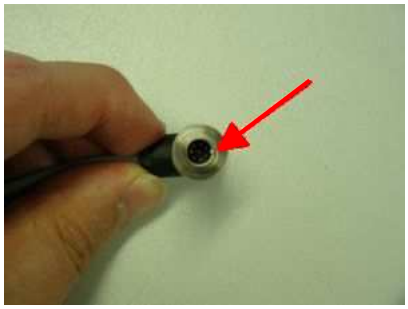
The APR380 has an integrated Class 2 Bluetooth module that enables wireless communication with other Bluetooth devices over a distance of up to 10 m.

For further information about the Bluetooth options of APR380 and how to establish a connection via the Bluetooth interface, read the separate APR Bluetooth manual.

### 3.3.3 APC150 RS232 port and APC250 USB port

In order to connect your APR to a PC you have to unscrew the protection cap of the plug at the top of the APR first, turn it anti-clockwise to remove it.

Before you connect the male connector of the APC, be aware that the connector has a nose and the plug in the reader has a notch, the position of both has to match. Do not try to put in the connector of the APC in a wrong position forcibly since this might damage the connector!



If the connector of the APC and the plug in the APR are mated correctly, turn the locking screw of the connector clockwise in order achieve a stable mechanical connection.

In the display of the APR you can see that the cable is connected in one of the status messages. That does not mean that reader can already communicate with the PC, therefore the correct comport has to be opened in your software.

APC150: Please bear in mind that the APC150 does not work without an external power supply, neither the communication nor charging.

APC250: This USB cable does not need an additional power supply for communication and trickle-charging, it is powered from the USB-port of the PC. The APC250 needs USB drivers in order to work properly. For the installation of the drivers see the driver installation guides on the APR CD. The drivers are located in the USB_Driver" folder. After the drivers were installed successfully, you have to start your PC-Software and open the correct comport.

For disconnecting the APC from the reader, turn the locking screw anti-clockwise. In order to ensure that the reader is waterproof in the field, screw the protection-cap back to the APR turning it clockwise.

# 4. The menus of the APR

Press the F button in order to enter the APRs main menu. Scroll through the menu using the ▲ / ▼ buttons. The main menu is divided into three categories, Setup, Operation and Data.

```
→ Setup
  Operation
```

In the *Setup* menu you can change the APRs settings concerning the hardware, the display and the interface.

```
  Setup
→ Operation
```

The *Operation* menu is mainly for the configuration of the two Hotkeys.

```
  Operation
→ Data
```

The *Data* menu gives you access to the stored data and lists.

In order to enter the submenus, press the ↵ button. You can now scroll through the menu items of the next deeper menu level and access the settings you want to change. Press C to leave a submenu and to return to the next higher menu level.

For a complete diagram of the menu structure see chapter 4.4.

## 4.1 Setup Menu

The Setup menu basically contains all settings concerning hardware. Here you will find options for RFID, interface, display, and time and date.

### 4.1.1 RF/ID menu

In the RFID submenu you can adjust all functions for reading a transponder.

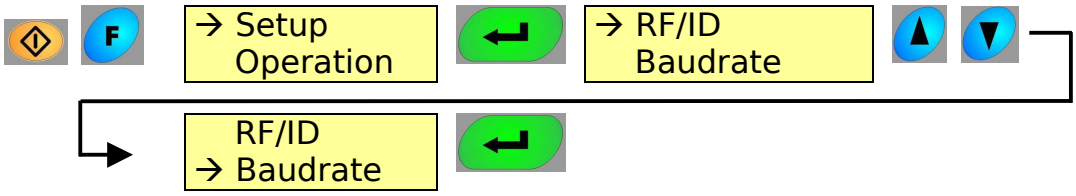
- **Read length**
  The read length determines the time for one reading attempt in seconds. The values range from 1 to 10 seconds.
- **Wireless Sync**
  It activates or deactivates the wireless synchronisation concerning ISO11785 and thus improves the reading performance in an environment with other activated ISO 11785 readers.
- **Sync level**
  The synchronisation level determines the level for the detection of other readers in the environment. This level can be adjusted because the correct operation of wireless synchronisation depends on the noise level in the environment – so the reader needs a threshold.

**We recommend not to change that setting, without a previous contact with Agrident, to prevent reading problems.**

- **Double Read**
  With the Double Read function you define, that the same transponder will not be read twice within a certain time. You can select values between OFF (disabled), 15, 30, 45 and 60 seconds.

### 4.1.2 Baud rate menu

In the menu item Baud rate the communication speed of the interface is defined. The setting can be chosen from a list of standardized rates between 9600 and 57600 bits/second. Pay attention that the baud rate of the APR has to have the same speed as your computing device in order to allow a successful communication.



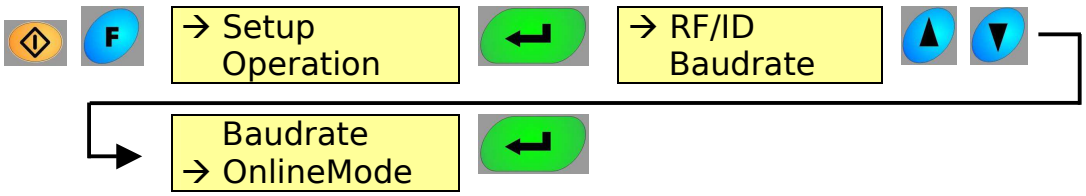
### 4.1.3 Online mode menu

The Online mode allows sending an ID immediately to other devices over the serial port, after it was read. The APR has to be connected to the other device. Such a device can be a scale or a computer. In case of computing devices you need a program that is able to collect incoming data on the serial port. For testing purposes Windows Hyperterminal or similar Software can be used.

There are several formats available, the ID can be sent in:

- **Off:** The APR will not send the ID after reading a transponder.
- **SCP format:** Only the last 10 digits of the ID will be sent.
- **Data long:** The Data long-mode transmits the complete dataset including time, date, Alias, Action Code and Action Code Plus value.
- **Data short:** The 3-digit Country Code and the 12-digit ID will be transmitted.
- **The French Format:** The data are sent in the French standard format.

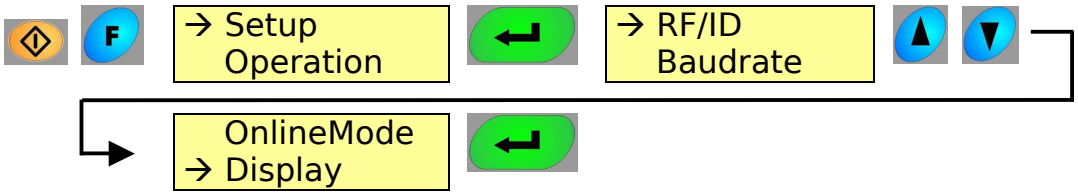
For detailed descriptions of the formats see Annex A: “Online mode output formats”.




### 4.1.4 Display menu

In this submenu various attributes of the display can be adjusted.

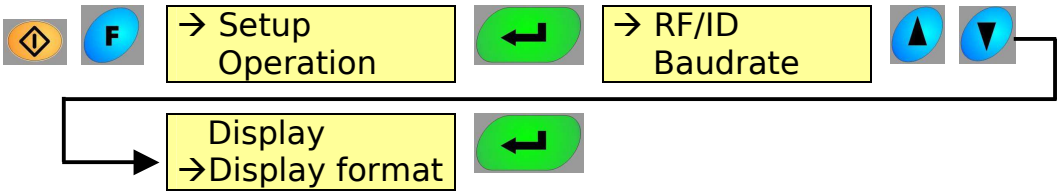
- **Language:** Selects the display language. The two standard languages are English and German, the third language depends on the firmware-version.
- **Power off**: In order to save battery capacity, the APR is switching off after a certain time, if no action has taken place. The Power off time can be configured between 3 and 20 seconds.
- **Contrast**: Selects between five different display contrast-levels.
- **Brightness**: Choose from five different display brightness-levels.
- **Light option:** With this option enabled the display will be illuminated permanently when the APR is powered externally.



### 4.1.5 Display format menu

In this submenu you can alter how a transponder ID is displayed and saved.

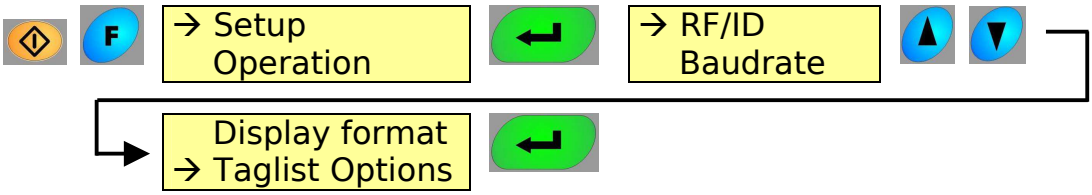
- **ID format:** Here you can determine how the transponder ID is displayed, either in ISO-mode, which decodes your ID according ISO 11784 or in HEX-mode, where the ID is displayed as a hexadecimal string.
- **Country code:** Decides whether the country code will be displayed numeric or alphanumeric according to ISO3166. The manufacturers code will always be displayed numeric.
- **Animal TAG flag:** If this option is enabled, “NO ANIMAL TAG” will be displayed in case of reading a transponder, which is not intended to be used for animals (Animal Bit =0). The transponder will be read nevertheless. You can watch the ID scrolling through the display after reading using / . If the option is disabled, the animal flag of the transponder will not be interpreted for displaying the ID.
- **ISO mode:** If set to “advanced”, you can watch additional information *Species code* and *Retagging code* after reading, if you scroll through the display with the / buttons. If the ISO mode option is set to standard, this is not possible.
- **AC format hot key:** The “AC format hot key”-setting decides whether to display Action Codes numeric or alphanumeric. Alphanumeric does only work, if a list of alphanumeric Action Codes is loaded into the APR.




### 4.1.6 Taglist options menu

This menu item contains options that influence the notification of Aliases.

- **Alias if available:** If this option set to “On”, the APR will display the Alias instead of the electronic ID, in case there was a valid assignment of the ID found in the Tag List. If set to “Off” the electronic ID will be displayed always, independent of valid assignments in the Tag List.
- **Ignore advanced ISO mode:** This option decides about how the APR should proceed when searching for assigned Aliases in the Tag List. “On” means, the reader will only compare the 15-digit ISO number of the read transponder and the IDs in the Tag List. Additional bits like *Retagging Counter* will be ignored. When set to “Off” the APR will only recognize a valid assignment, if the complete content of the transponder is identical – including the advanced ISO information.

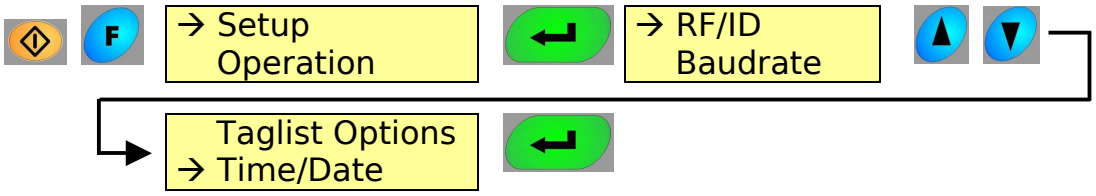


### 4.1.7 Time/Date menu

When a clock error (see chapter 3.2.1) occurred, the APR will jump into the Time/Date menu automatically. Carry out the following instructions to enter a valid time and date.

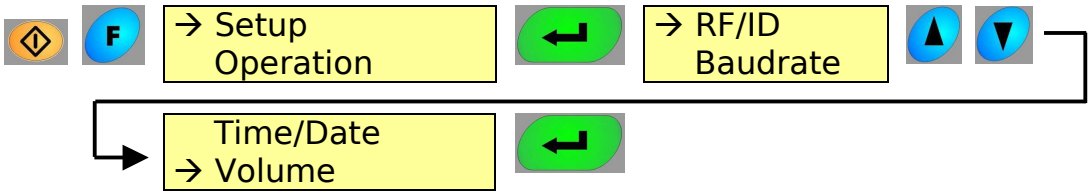
In this submenu you can change time, time format, date and date format. This affects the time and date on the display and the timestamp that is added to the ID.

- **Set time:** Change the time value via the / buttons of the keypad.
- **Time format:** Decide whether you want an am/pm or a 24 hour format.
- **Set date:** Change the date via the / buttons of the keypad.
- **Date format:** Decide whether you want European (dd.mm.yy) or US (mm.dd.yy) date standard.




### 4.1.8 Volume menu

The APR emits acoustical signals. In this submenu you can change the volume of these signals within a range from 0 to 15.

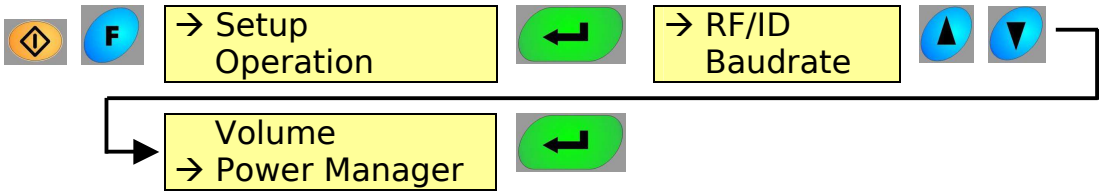


### 4.1.9 Power manager menu

You always have to select the correct category of batteries if you change the type. Generally there are two different types of batteries, non-rechargeable (primary cells) and rechargeable batteries. For the rechargeable batteries you also have to select the nominal capacity, which is usually imprinted on the battery. Select a value between >1000 mA, >1500 mA, >2000 mA and >2400 mA.

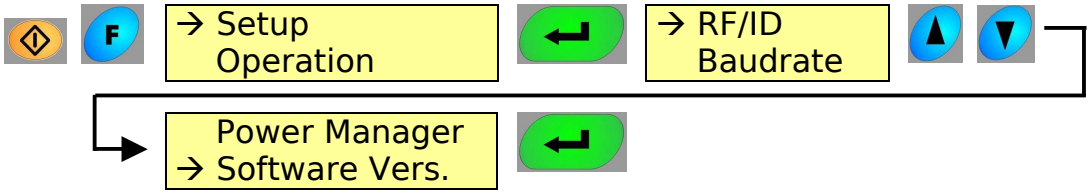
Select the battery type carefully! If you choose “rechargeable ->…” the APR will always try to charge the batteries as soon as an external power supply (or APC250) is connected – independently of battery type that is really used.

| | |
|---|---|
| | **Warning! Recharging standard non-rechargeable batteries will destroy them and the acid of the batteries will damage the APR. Any defect of the reader caused by recharging standard non-rechargeable batteries is not covered by the warranty.** |



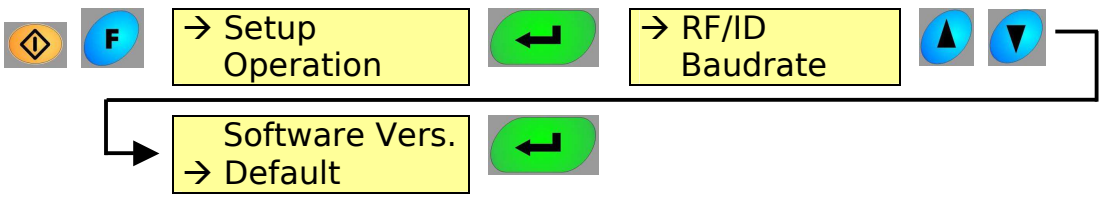

### 4.1.10 Software version menu

In the Software version menu you can find information about the readers Firmware version, its date of release, Bootloader version and the Serial number of the APR. Scroll from one information to the next using the / buttons.




### 4.1.11 Default menu

Sets all values back to factory settings (chapter 4.5 shows all defaults). Confirm with “Yes” or cancel the factory settings reset with “No”.

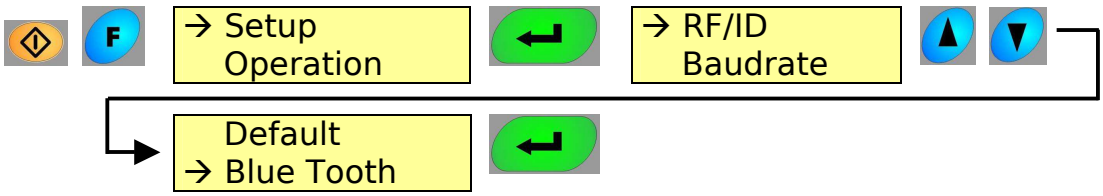


### 4.1.12 Blue Tooth menu

When you do not need the Bluetooth connection, we recommend to use the option **Disable** in order to lower the power consumption.

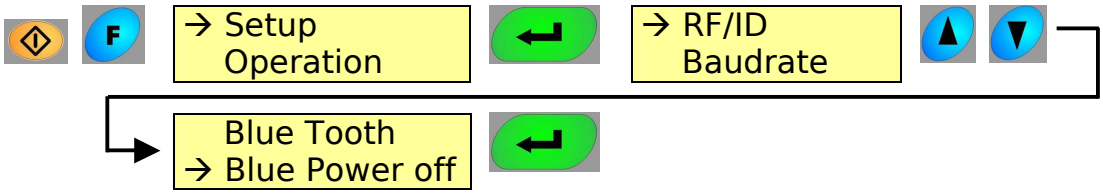
**Outdoor use:** The APR doesn't switch off automatically as long as it is in range of other devices that have an active connection to the reader via Bluetooth (e.g. with a pocket PC). It does not matter whether there is communication on the interface or not. As soon as the Bluetooth connection is dropped, the APR switches off after the timeout has elapsed . The value for this timeout is configurable in the *Setup → Blue Power off,*. This option is intended for outdoors, e.g. while the APR sends transponder data to a PDA directly after reading (Online-Mode = active).

**Indoor use:** The APR doesn't switch off automatically as long as it is communicating with any other device (e.g. with a PC where Agrident Demo Software is installed). As soon as the communication stops, the APR switches off, provided the time ran down, that was given in *Setup → Blue Power off.* This option is intended for "office use" in order to download collected data from the APR.




### 4.1.13 Blue Power off menu

In the *Blue Power off* submenu you select the timeout, after which the APR shuts down when the Bluetooth connection was terminated. A period of 30, 60 or 90 seconds can be chosen.




| | |
|---|---|
| | **Bluetooth and Blue Power Off menus are available for the APR380 which only.**<br><br>**For further information about the Bluetooth options of APR380 and how to establish a connection via the Bluetooth interface, read the separate APR Bluetooth Manual.** |

## 4.2 Operation Menu

The *Operation* menu is mainly for the configuration of the two Hotkeys. The Hotkeys can be programmed to perform more complex operations than just reading the ID. You can assign Aliases or Action Codes to the ID after reading if the Hotkeys are set up in the correct way. For detailed explanations, what Aliases or Action Codes are, see chapter 5.

Move through the operation menu with the / buttons. Press in order to enter a submenu, press in order to leave a submenu and return to the operation menu.

### 4.2.1 Hotkey A menu

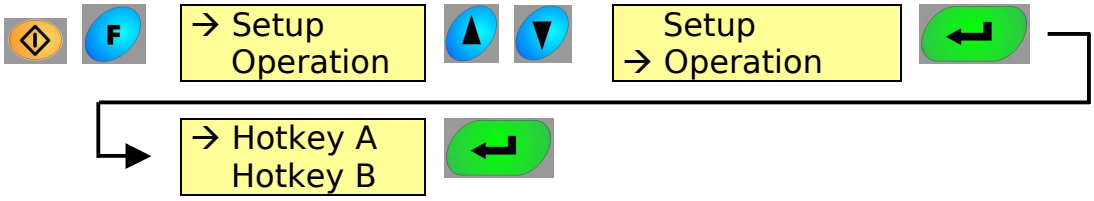
In this menu item you can set up the functionality of Hotkey A.

- **Mode:** The mode assigns the different operational options regarding Alias and Action Code to the Hotkey.
    - **No Action code:** No additional assignment, just the ID will be recorded.
    - **Assign Ask:** Aliases in the previously uploaded Tag List, which are not already assigned, can be linked to the scanned transponder IDs. You can also enter the Alias manually using the APRs alphanumeric keys, if there is no assignment in the Tag List or no Tag List has been uploaded. In the *Assign Ask* mode the ID is not saved in the data memory, just the assignment between ID and Alias is saved in the Tag List.
    - **Assign Ask save:** The same like the *Assign Ask* mode but the IDs are saved in the data memory as well.
    - **AC Ask:** After reading a transponder, the APR will ask for an Action Code that can be selected from a previously uploaded list. If no Action Code list has been uploaded, you just can select an Action Code number. In the *AC Ask* mode, the reader will always open the Action Code List and you have to select an action manually using the / buttons for scrolling. Confirm your choice with .
    - **AC Ask plus:** The same like *AC Ask* but additionally to the Action Code, you have to enter a numeric value.
    - **AC Auto:** The APR will always assign the Action Code that is selected in the *AC Code* menu automatically. If you want to change the Action Code, you have to change the *AC Code* value.
    - **AC Auto plus:** The same like *AC Auto* but additionally to the Action Code, you have to enter a numeric value.
- **AC Code:** For the *AC Auto* modes you have to use this menu item in order to define the Action Code that should always be added to the ID automatically. For the AC Ask modes you can set this value to “last used”. The result will be that the APR will open the list of Action Codes always, but it will start with the last used Action Code. So if you have multiple animals with the same action in series, you just need to confirm the Action Code with enter and you do not need to scroll to the same action every time.

- **Save mode:** Decides if the data should be saved in the reader's memory automatically or not. If *Save mode* = Auto, all datasets will be saved without confirmation. If the setting = Ask, you have to decide for every dataset, wether to save the data or not.

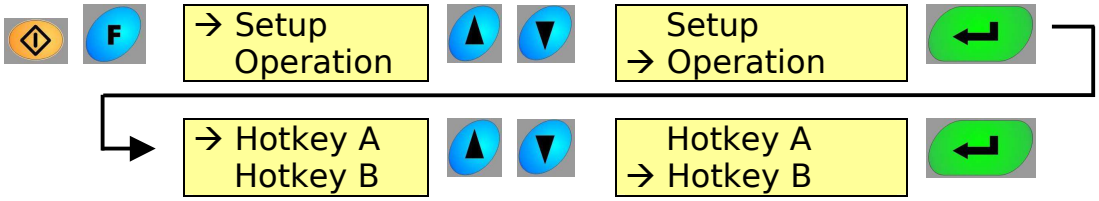
- **Power off mode:** Selects the time, the APR remains activated after the operation is finished. Values between 1 and 20 seconds are possible - OFF means, the APR will only look for the "Power off" time in the setup menu.

- **Search mode:** In combination with the Alias, this mode allows to find individual animals in a larger group of animals. If the reader recognizes a valid assignment in the previously uploaded Tag List, it will indicate that using a different acoustic signal and a different LED signal. Select "On" in order to activate the Search mode, "Off" in order to deactivate it.




### 4.2.2 Hotkey B

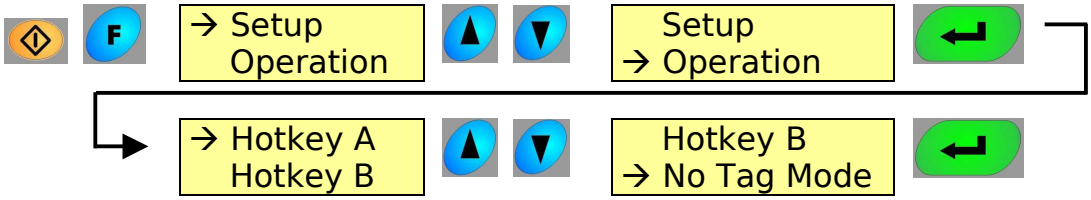
The Hotkey B menu is the same as for Hotkey A but the settings apply to Hotkey B.



### 4.2.3 No Tag mode menu

If the *No Tag mode* is activated, it is possible to enter data manually if a reading attempt failed, e.g. in case of a lost or broken transponder or a transponder being out of reading range. The *No Tag mode* has the following options:

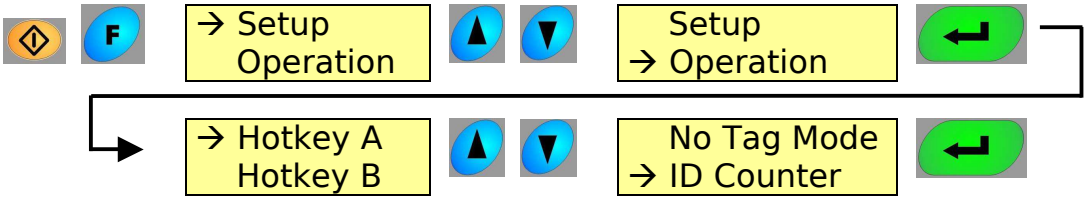
- **Off:** The “Off” setting does not allow any entry of data after.
- **Auto:** After a reading attempt failed, the APR asks immediately for data input via keypad.
- **Key input:** You have to press F2 after reading failed in order to enter data manually.




### 4.2.4 ID counter menu

If the ID Counter is activated, it counts the amount of read IDs since the last reset of the counter. In this case no ID is saved in the memory twice or more. If a transponder was read more than once, the APR will display “Double Read”.

After switching the ID counter off and on again, the counter is reset to zero.

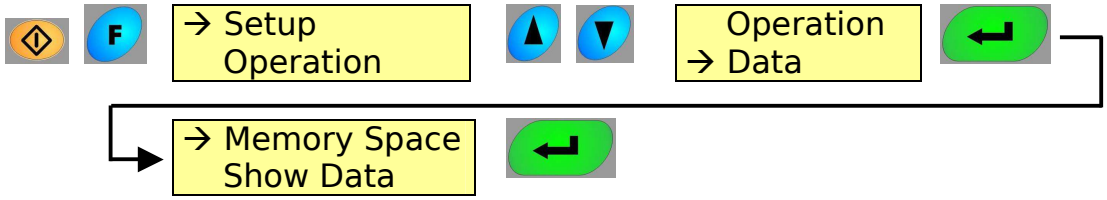


## 4.3 Data Menu

The *Data* menu gives you access to the stored data and lists. You can watch the collected data and watch the Tag List, clear the memory or single lists only, send the memory content directly to another device via the serial port and look for the remaining memory capacity.

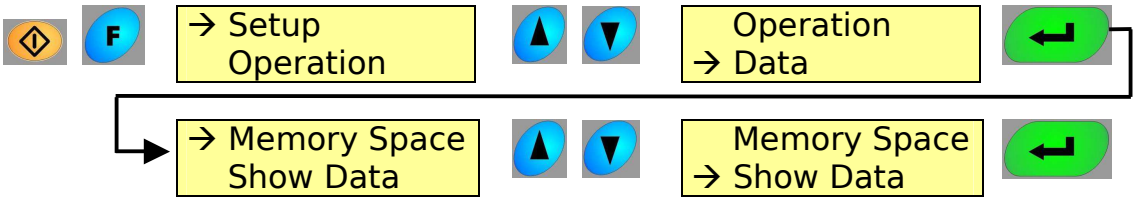
### 4.3.1 Memory Space menu

The *Memory space* menu shows the current amount of used memory and still available memory in the different categories: Data, Action Codes and Tag Lists. Enter the menu item *Memory Space* and scroll through the different memory areas using the / buttons.




### 4.3.2 Show Data menu

This submenu allows you to review the collected data in the data memory. If you enter the *Show Data* menu you will see the IDs that have been saved using the / buttons. When you choose a particular dataset with the button, the APR will change into the *data view mode*. In this mode you can move through the entire content of the dataset step by step. Beside the ID you can have a look at Alias, Action Code, Action Code Plus, Timestamp and transponder type. “Zx” is the number of the current line in the dataset.



### 4.3.3 Show Tag List menu

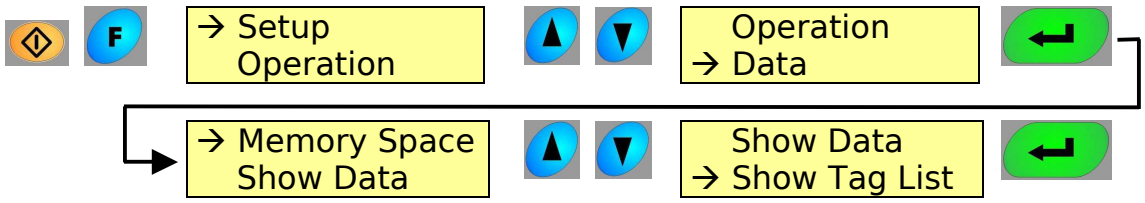
The *Show Tag List* menu shows the Aliases that are loaded into the APR and whether they are already assigned to IDs or not.

| | |
|---|---|
| Show Tag L 0 P<br>1234 | Show Tag 0 Z0<br>980 000001005714 |

The character “P” indicates 1234 is an already assigned Alias, this means the Alias is linked to a transponder ID. The “0” in front of the “P” shows, that it is the first dataset entry in the Tag List. After pressing the button the display shows the Country Code and the 12-digit ID. With the / buttons you can scroll between ID and Alias, leave the dataset entry by pressing .

| | |
|---|---|
| Show Tag L 4 F<br>5678 | Show Tag 4 Z0<br>No Transponder |

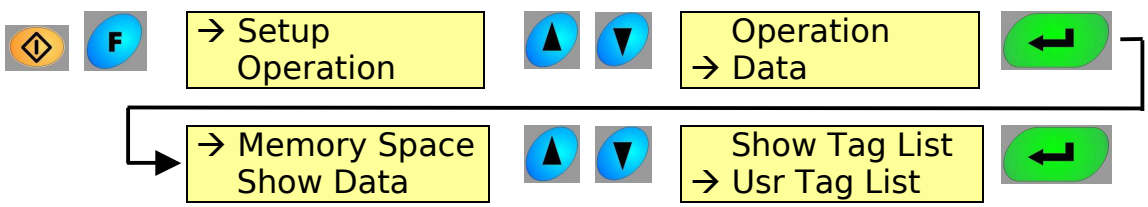
The character F indicates 5678 is an unassigned alias, this means it is an Alias in the Tag List, which is not already linked to an ID. This Alias can be assigned to a read ID by using the Assign-ask-mode (see chapter 4.2). After pressing the button the display shows that no ID is assigned.




### 4.3.4 Usr Tag List menu

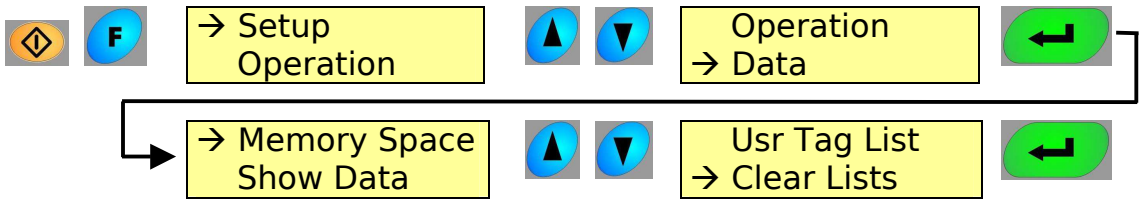
The *User Tag List* menu shows all Tag List entries, that have been made using the APR in the *Assign Ask* or the *Assign Ask Save* mode. That means, the assignments were not made on the PC previously. They could either have been typed in via the APRs alphanumeric keypad or the assignment could have been made linking previously uploaded “Null Tags” with the APR. For instructions how to create Tag Lists that contain “Null Tags”, see the APR Demosoftware manual or the manual of your management software.

In case that there have no assignments been made with the APR yet, “no assign list” will be displayed.



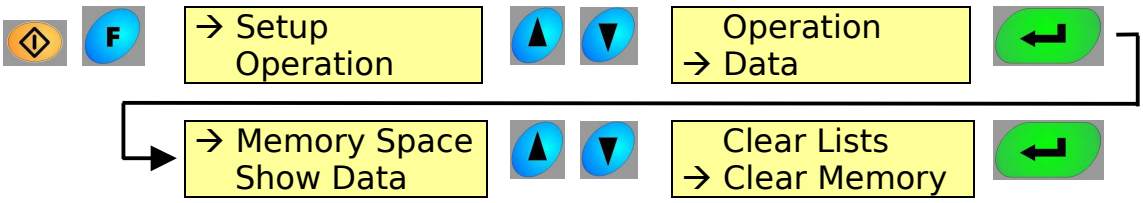
### 4.3.5 Clear Lists menu

This menu item deletes the Tag List and the Action Codes List.



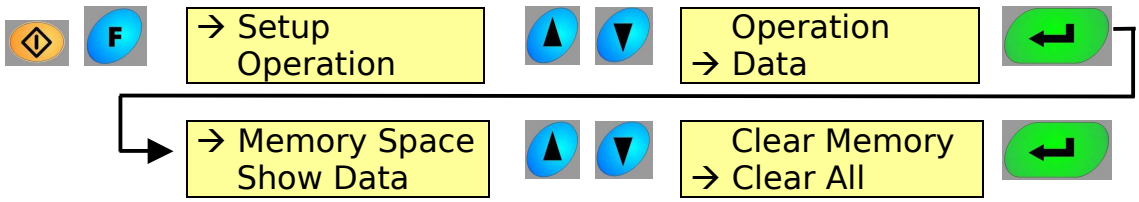

### 4.3.6 Clear Memory menu

The *Clear Memory* menu deletes the complete content of the data memory, this means all collected transponder data.




### 4.3.7 Clear All menu

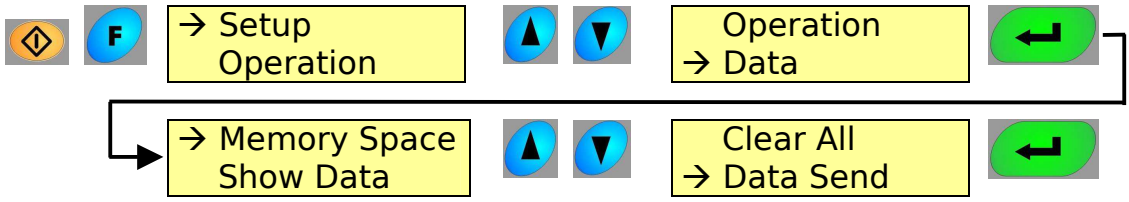
Deletes all lists and the collected data in the APRs memory.



### 4.3.8 Data Send menu

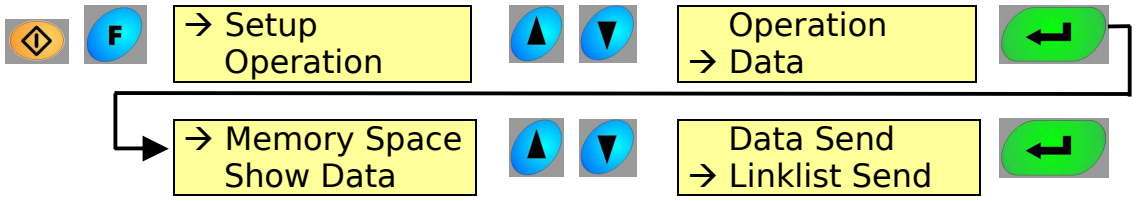
The *Data Send* menu instructs the APR to send the complete content of the data memory, this means the collected IDs, to the interface. Therefore the reader has to be connected to a PC and the correct comport has to be opened in the corresponding software. The software can be customized software or a terminal program like Windows Hyperterminal.

In order to allow this function to work, the *Online Mode* has to be activated. The format that is selected in the *Online Mode* menu is also used for the data transmission in the *Data Send* function. See also chapter 4.1.3 “Online Mode menu” for the available formats.



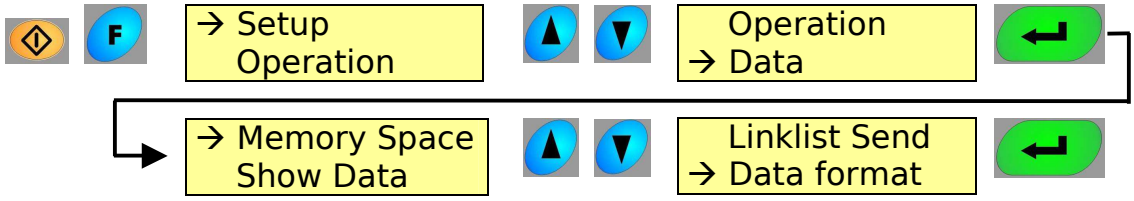

### 4.3.9 Linklist Send menu

Sends the Tag List with all assigned Aliases to the serial interface. The reader has to be connected to a PC and the correct comport has to be opened in the corresponding software.




### 4.3.10 Data Format menu

In the *data format* menu you can enable the enhanced format for the Action Code Plus which allows using values of up to 65535. If it is turned off, the dataset will be compatible to the APR300 and the APR400 with Action Code Plus values up to 255.



## 4.4 Menu Structure

This chapter displays the menu structure of the APR. For a detailed description of the menus subsections, see the corresponding chapters 4.1 - 4.3.

- Main menu
  - Setup menu
    - RFID
      - Read Length
      - Wire Less Sync
      - Sync Level
      - Double Read
    - Baudrate
    - Online mode
    - Display
      - Language
      - Backlight
      - Power Off
      - Contrast
      - Brightness
      - Light Option
    - Display format
      - ID Format
      - Country Code
      - Animal TAG Flag
      - ISO Mode
      - AC format Hot Keys
    - Taglist options
      - Alias if available
      - Ignore Adv ISO
    - Time / Date
      - Set time
      - Time format
      - Set Date
      - Date format
    - Volume
    - Power Manager
    - Software Version
    - Default
    - Blue Tooth
    - Blue Power off
  - Operation menu
    - Hotkey A&B
      - Mode Key A&B
        - No Actioncode
        - Assign Ask Save
        - Assign Ask
        - AC Ask Plus
        - AC Auto Plus
        - AC Ask
        - AC Auto
      - AC Code Key A&B
      - Save Mode Key
      - Power Off Key A&B
      - Search Mode Key A&B
    - No TAG Mode
    - ID Counter
  - Data Menu
    - Memory Space
    - Show Data
    - Show Tag List
    - Usr Tag List
    - Clear Lists
    - Clear Memory
    - Clear All
    - Data Send
    - Linklist Send
    - Data Format

* “Blue Tooth” and “Blue Power Off” menus are available for the APR 380 only

## 4.5 Default Settings

The APR comes with the following default settings:

- Setup menu:
  - o RF/ID -Read Length =7 seconds; -Double Read =Off
  - o Display -Language =English; -Power Off =5 seconds
  - o Display format -ID Format =ISO; -ISO Mode =Standard
  - o Volume =5
  - o Blue Tooth * =Indoor
  - o Blue Power Off * =30 seconds

* "Blue Tooth" and "Blue Power Off" menus are available for the APR 380 only

- Operation Menu:
  - o Hotkey A and B -Mode =AC Auto; -AC Code Hotkey A =1; -AC Code Hotkey B =2; -Save Mode =Auto; -Power Off =3 seconds; -Search Mode =Off
  - o No TAG Mode =Auto
  - o ID Counter =Off

- Data menu:
  - o Data format =Off

Modifications in the settings will be saved automatically. With the *Default* function in the *Setup* menu the factory settings will be restored.

# 5. Assigning additional information to the ID

The APR can do much more than just simply reading transponders and saving the ID. This chapter explains the additional information that can be linked to the electronic ID.

With the Hotkeys A and B you can access the functions Alias and Action Code fast and easy. The configuration of the Hotkeys can be changed in the APRs menu (see chapter 4.2) or using the Agrident PC-Demosoftware.

## 5.1 Alias

An Alias is an alphanumeric string of up to 16 characters. It can be linked to one ID. A list of Aliases is called “Tag List”.

The Alias function can be used for multiple different operations, for example:

- Assignment of the visual ID or management number to the electronic ID.
- In combination with the *Search Mode*, particular animals can be identified in a larger group of animals.
- Irregular conditions of animals can be recorded with the Alias function using the *Assign Ask mode* or the *Assign Ask Save mode*.

### 5.1.1 Using a preassembled Tag List

A Tag List containing Aliases linked to transponder IDs can be created on the PC using appropriate software. Instead of displaying the electronic ID after reading, the APR can be set up to show the Alias on the display (see also chapter 4.1.6 “Alias if available”).

In this case, the assignment has already been made. So there is no additional Alias assignment possible in the field and thus the *Assign Ask mode* or the *Assign Ask Save* mode cannot be used here, at least for IDs which already have an Alias. If an ID is already assigned and you are using the *Assign Ask mode* or the *Assign Ask Save* mode, the APR will display “already assigned”.

### 5.1.2 The Search function with preassembled Tag List

In combination with the *Search Mode* (see chapter 4.2.1), particular animals can be identified in a larger group of animals. If one of the searched animals was found in the Tag List, the APR will indicate that using a different acoustic and visual signal.

An example: You want to sell some animals and you have to find them in a large flock. Just create a Tag List with all animals you want to sell and add the corresponding Alias in the list, e.g. “Sale”. Set up your APR in the following way:

- Alias if available = On
- Mode Hotkey A (or B) = *No Actioncode*
- Search Mode Hotkey A (or B) = On

Now the APR will indicate an assigned ID using a different acoustic signal and the LED will flash green and red. Additionally your Alias will be displayed instead of the ID, for example “Sale”.

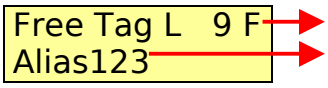
### 5.1.3 Assignment with the APR using Null-Tags

You can also assign the Alias in the field after reading a transponder with the APR using the *Assign Ask mode* or the *Assign Ask Save* mode. For this application you also have to create a Tag List on the PC first but you have to leave the ID blank, this is done by creating a Tag List with so called “Null-Tags”. Please see the APR-Demosoftware manual or your management software manual for information about how to create a Tag List with Null-Tags. In such a Tag List you only create the Alias entries, the corresponding IDs are left blank and are assigned in the field. After uploading the Tag List you can start to assign the IDs using the APR.

Set up the APR like below for this operation mode:

- Mode Hotkey A (or B) = *Assign Ask* or *Assign Ask Save*

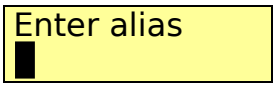
After you read a transponder with the corresponding Hotkey, the APR will open the list with Aliases that are not assigned yet:




9 = number of the Alias in the Tag List, F = not assigned yet
name of the Alias

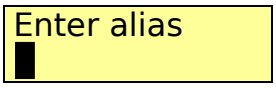
Choose the correct Alias using the ▲ / ▼ buttons. Confirm your choice with ↵ or cancel the assignment with C.

If you still have unassigned Aliases in the Tag List, but you want to use an Alias that is not in the list, you can also enter it manually via the alphanumeric keys pressing F2 after reading the transponder.



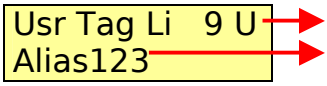

### 5.1.4 Assignment with the APR using the keypad

Another possibility to assign an Alias in the field is to enter the string using the alpha-numeric keys. In this case it is not necessary to upload a preassembled Tag List to the APR first, the APR will always ask for a manual input. One of the Hotkeys has to be configured to *Assign Ask* or *Assign Ask Save* mode. After reading the transponder, the APR will always display:




Type in the Alias and confirm with ↵. In this mode you could record irregular conditions or any other remark. If you always want to type in the Alias manually, make sure that there are no unassigned Tags in the Tag List.

Assignments which have been made like in the above described chapters 5.1.3 and 5.1.4 are visible in the *Usr Tag List* in the *Data* menu:




9 = number of the Alias, U = assigned in the field
name of the Alias

## 5.2 Action Codes

Action Codes are used to link a predefined action (e.g. weight, fed, sick, examined) to a scanned transponder and thus to the animal.

An Action Code is an alphanumeric string of up to 14 characters. It can be linked to all transponders that are scanned. Compared to the Alias, the Action Code List always has to be sent to the APR before you can work with Action Codes. If you do not upload the List first, you can only link numbers of Actions to the ID, not the name of the Action.

The Action Code List has to be created and uploaded using the appropriate PC software like your management program or the APR-Demosoftware. Up to 90 different Action Codes can be uploaded to the APR.

In order to use the Action Code function with the APR, you have set one of the Hotkeys into the desired mode first (see *Mode* menu chapter 4.2.1).

### 5.2.1 AC Ask mode

In the *AC Ask* mode, the reader will always open the Action Code List and you have to select an action manually using the / buttons for scrolling. Confirm your choice with . The APR will always display the Action Code selected in the *AC Code* menu item first. If you want to have last linked Action after every reading, select “last used” in the *AC Code* menu - so if you have multiple animals with the same action in series, you just need to confirm the Action Code with enter and you do not need to scroll to the same action every time.

```
AC Code          Key A
→AC=last used
```

Initiate the operation using the corresponding Hotkey. The APR will start a reading cycle:

```
Read Hotkey A
.....
```

If a transponder was read successfully, you can see the ID in the first line of the display. The second line shows the Action Code:

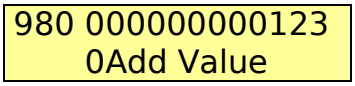
```
980 000000000123
→AC=sale
```

Choose the desired Action Code from the list using the / buttons. Link the Action Code to the ID with . The APR will confirm that the dataset has been saved:

```
980 000000000123
saved
```

### 5.2.2 AC Ask Plus mode

The same like *AC Ask* but additionally to the Action Code you have to enter a numeric value:



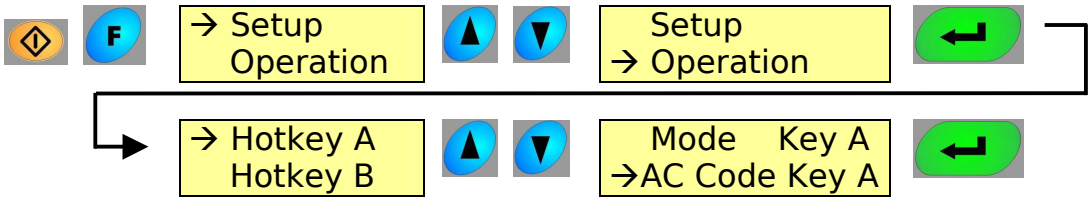

Use the alphanumeric keys in order to enter the value, use ◄ in order to delete one digit Confirm your input pressing ↵.

If the Data format is set to “On” (see chapter 4.3.10) you can assign values of up to 65535, “Off” only allows values up to 255.

### 5.2.3 AC Auto mode

The APR will always assign the Action Code that is selected in the *AC Code* menu automatically. It is not possible to select a different Action Code after each reading. If you want to change the Action Code, for example because you want to link a different action for the next group of animals, you have to change the *AC Code* value.

If you have one and the same action for only a few animals, it makes more sense to use the *AC Ask* mode in combination with the *AC Code* value “last used”. In that way you only have to confirm the same Action Code by pressing ↵ for a few times. The AC Auto mode is more intended to be used, if lots of IDs should be linked to the same Action Code. The reason is that every time you want to change the Action Code, you have to go back to the operation menu in order to change the *AC Code* value:

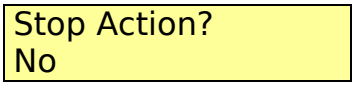



### 5.2.4 AC Auto Plus mode

The same like *AC Auto* but additionally to the Action Code you have to enter a numeric value. If the Data format is set to “On” (see chapter 4.3.10) you can assign values of up to 65535, “Off” only allows values up to 255.

### 5.2.5 Cancelling the data record

If you have read the transponder and you do not want to link an Action Code or Action Code Plus to this ID, you can cancel this record by pressing C. The APR displays:




You can use the ▲ / ▼ buttons in order to select between “Yes”, “No” and “Skip”. “Yes” will also distort the ID, “Skip” will save the ID without the Action Code or Action Code Plus and “No” will bring you back into the selection menu for Action Codes.

# 6. Technical Data

| | |
|---|---|
| **Frequency** | 134,2 kHz |
| **Transponder types** | HDX compatible (ISO 11784/5)<br>FDX-B compatible (ISO 11784/5) |
| **Reading range** | Approx. 25 cm with HDX transponder of a ∅30 mm<br>Up to 20 cm with FDX-B transponder ∅30 mm<br><br>Depends also on transponder quality |
| **Interfaces** | USB with optional docking station ADS200 or APC 250 interface<br>RS 232 with optional APC 150 interface |
| **Memory** | Flash for 5000 data set |
| **Power supply** | 2 x 1,5V AA mignon batteries<br><br>Trickle charge in connection with ADS200 or APC250<br>Fast charge in connection with AC/DC Adapter via APC150/250 |
| **Protection** | IP 64 |
| **Temperature range** | -10°to 60℃ |
| **Dimensions** | LxWxH 175x90x36 mm |
| **Weight** | approx. 300g |

# 7. Safety and Care

The manufacturer accepts no liability for damage resulting from improper use or use not consistent with that described in these operating instructions.

- The APR contains no parts that can be repaired by the user. For this reason the Reader Electronic may only be repaired by authorised customer service personnel.
- In both operation and storage of the reader please secure to comply with the environment conditions specified in the technical data.
- Clean the APR only with a damp cloth. Use only water and any commercially available cleaning agent.

Any modification to the APR Electronic will render the warranty null and void.

# 8. Warranty

The manufacturer of the APR Electronic will provide a warranty of

**12 months**

from the day the device is shipped and subject to the following conditions:

1. Without submission of proof of purchase no warranty can be given.
2. In the event that defects are detected the manufacturer is entitled to choose between up to two attempts at repair or supplying a replacement device on one occasion. The warranty period for the repaired item or for a replacement item is 3 months but will always extend to the end of the original warranty period. No further claims can be entertained, especially claims for compensation for consequential losses. This exclusion of liability does not apply to claims made on the basis of the Product Liability Act.
3. Warranty claims cannot be entertained unless the Agrident system was installed properly and used properly and for the purpose intended.

No warranty obligations exist in particular when:

1. Damage is attributable to improper use of the device, to a incorrect connection or incorrect operator action;
2. The device was not cared for and maintained in accordance with the manufacturer's recommendations and this is the cause of the damage;
3. The damage is due to any modification to the device;
   The damage is due to force majeure, for example lightning strike;
   The damage is due to wear, resulting from overstressing mechanical parts.

# 9. International approvals

## FCC digital device limitations

**Radio and Television Interference**
This equipment has been tested and found to comply with the limits for a digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and television reception.

Caution! Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

## Canadian Radio Emissions Requirement

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Recèlement sur le brouillage radioélectrique édicte par le ministère des Communications du Canada.

## CE marking

Hereby, Agrident BV declares that this equipment, if used according to the instructions, is in compliance with the essential requirements and other relevant provisions of the RTTE Directive 1999/5/EC. For use in all countries of the EU.

To obtain a copy, contact Agrident BV and request the "Declaration of Conformity" document.

Agrident BV
mail@agrident.com

In case of alteration of the product, not agreed to by us, this declaration will lose its validity.

This symbol indicates proof of conformity to applicable European Economic Community Council directives and harmonized standards published in the official journal of the European Communities.

CE

The APR350 is also successfully rated for the CCIA and JRC approvals.

# 10. Annex A – Online mode output formats

This annex shows the Online mode output formats in detail.

| | |
|---|---|
| **Data short** | 3-digit country code followed by <space> the 12-digit ID and <CR><LF><br><br>Example: 980 123456789012 |

| | |
|---|---|
| **Data long** | • Number of the dataset in the memory<br>• Date<br>• Time<br>• Transponder type<br>• Action Code<br>• Action Code Plus value<br>• 3-digit country code and 12-digit ID<br>• Alias<br><br>Example:<br><br>20,03.09.09,15:15:26 ,FDXB , 1=Feeded , 545,942 000000598917 ,No Alias |

| | |
|---|---|
| **SCP-Format** | Last 10 digits of the ID followed by <CR><LF><br><br>Example: 3456789012 |

| | |
|---|---|
| **French format** | The French format contains additional information, like animal flag, retagging counter, time stamp, etc. |

An example for the French format:

| S | A | RT | UI | UI | RF | RF | AP | ID0 | ID1 |
|---|---|---|---|---|---|---|---|---|---|
| 'I' | '1' | '0' | '0' | '0' | '0' | '0' | '0' | '9' | '8' |
| ID2 | ID3 | ID4 | ID5 | ID6 | ID7 | ID8 | ID9 | ID10 | ID11 |
| '0' | '1' | '2' | '3' | '4' | '5' | '6' | '7' | '8' | '9' |
| ID12 | ID13 | ID14 | DD | MM | YY | HH | mm | CR | LF |
| '0' | '1' | '2' | 06 | 08 | 09 | 15 | 21 | 0x0D | 0x0A |

Meaning of the fields:

| Field | Definition | Example | Remarks |
|---|---|---|---|
| S | Start of message | I | |
| A | Animal Flag | 1 | 0 or 1 |
| RT | Retagging Counter | 0 | 0 to 7 |
| UI | User Info | 00 | For EU species code |
| RF | Reserved Fields | 00 | |
| AP | Additional Pages | 0 | 0 or 1 |
| ID0…ID 2 | Country code | 980 | |
| ID3…ID14 | ID | 123456789012 | |
| DD | Day of reading | 06 | |
| MM | Month of reading | 08 | |
| YY | Year of reading | 09 | |
| HH | Hour of reading | 15 | |
| mm | Minute of reading | 21 | |
| CR | Carriage Return | | |
| LF | Line Feed | | |

# 11. Glossary

- Action Code (AC)
  An Action Code is a string of up to 14 alphanumeric characters. Action Codes allow to assign events like sales, movements, diseases or treatments to animals. An Action Code can be combined with the transponder ID after reading. It can only be assembled and uploaded to the APR using appropriate software. The Action Code Plus allows to assign a numeric value in addition to the Action Code, e.g. the weight of an animal.

- Alias
  An Alias is a string of up to 16 alphanumeric characters, e.g. a visual ID, the management number or just a remark. It can be assigned to one transponder ID. A list of Aliases is called Tag List. It can either be uploaded into the APR or it can be created manually in the field using the APRs keypad.

- FDX-B
  Transponder type (full duplex), which transmits its data while the RF field is active using Amplitude Modulation (AM). FDX transponders contain 128 bits of raw data, the ID notation is in compliance with ISO 11784/11785.

- HDX
  Transponder type (half duplex), which transmits its data directly after RF field is deactivated using Frequency Shift Keying (FSK). HDX transponders have 104 bits of raw data, the ID notation is in compliance with ISO 11784/11785.

- ID
  Electronic Identification number of a transponder

- ISO 11784/11785
  International standard concerning the use of RFID technology in the identification of animals; it defines the transponder types to be supported and the ID notation.

- Reader
  A device which is able to communicate with transponders using an internal or external antenna. The reader generates a radio frequency field (RF) in order to receive the data of a transponder. The received data can either be stored in an internal memory or it is transmitted to an external controller via an interface.

- RFID
  Radio Frequency Identification. Method to transmit identification data contactless using transponders.

- Tag List
  List containing Aliases

- Transponder or Tag
  Data carrier for RFID applications, available in various models and types.

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